Amendments to the Claims:

This listing of claims will replace all prior versions, and listings, of claims in the application:

Listing of Claims:

What is claimed as the invention is:

1. – 40. (*Canceled*)

41. *(New)* A method for producing hepatocyte lineage cells from primate pluripotent stem (pPS) cells, comprising culturing the pPS cells in a medium comprising a hepatocyte lineage differentiation agent selected from sodium butyrate, n-butyric acid, trichostatin A, propionic acid, isobutyric acid, and isoavaleric acid; wherein the hepatocyte lineage cells have at least three of the following characteristics:

- antibody-detectable expression of α_1-antitrypsin;
- antibody-detectable expression of albumin;
- absence of antibody-detectable expression of α-fetoprotein;
- RT-PCR detectable expression of asialoglycoprotein receptor;
- evidence of glycogen storage;
- evidence of cytochrome p450 activity;
- evidence of glucose-6-phosphatase activity; or the morphological features of hepatocytes.

42. *(New)* The method of claim 41, wherein the heparocyte lineage differentiation agent is sodium butyrate.

43. *(New)* The method of claim 41, wherein differentiation is initiated in the pPS cells before the cells are cultured with the hepatocyte lineage differentiation agent.

44. *(New)* The method of claim 43, wherein differentiation of the pPS cells is initiated by forming embryoid bodies.

45. *(New)* The method of claim 43, wherein differentiation of the pPS cells is initiated by culturing in a medium containing dimethyl sulfoxide (DMSO), dimethylacetamide (DMA); hexmethylene bisacetamide, or another polymethylene bisacetamide.

46. *(New)* The method of claim 41, comprising further culturing the cells in a medium containing a cytokine or hormone selected from glucocorticoids, epidermal growth factor (EGF), insulin, TGF-α, TGF-β, fibroblast growth factor, hepatocyte growth factor (HGF), IL-1, IL-6, IGF-I, IGF-II, and HBGF-1.

47. *(New)* The method of claim 46, wherein the cells are cultured in a medium containing at least three of said cytokines or hormones.

48. *(New)* The method of claim 47, wherein the cells are cultured in a medium containing EGF, TGF-α, and HGF.

49. *(New)* The method of claim 41, wherein the pPS cells are human embryonic stem cells.

50. *(New)* The method of claim 41, further comprising maintaining the hepatocyte lineage cells by culturing them in a medium containing sodium butyrate.